

REMARKS

Applicant respectfully requests reconsideration of the present application in view of the foregoing amendments and in view of the reasons that follow.

In the specification, Paragraph [0002] on Page 1 have been amended to correct grammatical errors. No new matter is added.

This amendment adds, changes and/or deletes claims in this application. A detailed listing of all claims that are, or were, in the application, irrespective of whether the claim(s) remain under examination in the application, is presented, with an appropriate defined status identifier.

Claim 14 is requested to be cancelled. Claims 1, 4-7, 9-10 and 12 are currently being amended. Support for the amendments can be found throughout the Specification, for example, in Figure 1 and Paragraphs [0027]-[0043]. No new matter is added.

After amending the claims as set forth above, claims 1-13 are now pending in this application.

I. Specification

The Specification is objected to. Paragraph [0002] on Page 1 have been amended to correct grammatical errors. The objection to the Specification is now moot in view of the amendments.

II. Claim Rejections under 35 U. S. C. § 102 & 103

Claims 1, 3, 10, 11, 13 and 14 are rejected under 35 U.S.C. 102(b) as being anticipated by Akutsu (J.P. 2002-039061 A). Claims 1-4 rejected under 35 U.S.C. 102(b) as being anticipated by Peuch (U.S. 6,644,931). Claims 5-9 and 12 are rejected under 35 U.S.C. 103(a) as being unpatentable over Akutsu in view of Peuch.

Independent claim 1 is amended to recite “a compressor connected to a discharge port of the last-stage vacuum pump of said at least one-stage vacuum pump without divergence, wherein said compressor is configured to aspirate all of gases from the last-stage vacuum

pump and depressurize an input side of said compressor.” For example, in the non-limiting example shown in Figure 1 of the Specification, the compressor (4c, 5c, 6c) is connected without divergence to the last-stage vacuum pump (4b, 5b, 6b) and aspirates all of gases from the last-stage vacuum pump (4b, 5b, 6b).

One advantage of the claimed features is that the compressor can assist the depressurization operation of the last-stage vacuum pump and suppresses back diffusion from the discharge port of the last-stage vacuum pump. These claimed features reduce the power consumption of the last-stage vacuum pump as compared with conventional apparatus and also reduce the manufacturing cost of a semiconductor device manufacturing apparatus or the like. *See* Specification, Paragraph [0023].

In contrast, neither Akutsu nor Puech disclose or suggest the above features recited in claim 1.

Specifically, Akutsu teaches that the last-stage vacuum pumps (rough vacuum pump 4, 5, 6) connected to high vacuum pump (screw pump 1, 2, 3) with the discharge ports of the last-stage vacuum pumps 4, 5, 6 open to the air, rather connected to a compressor, as recited in claim 1. *See* Akutsu, Figure 1 and Paragraph [0018]. Consistently, discharge ports of the last-stage vacuum pumps 19, 20, 21, as shown in Figure 4 of Akutsu are also open to the air, rather connected to a compressor, as recited in the independent claims. Other portions of Akutsu also fail to disclose such a compressor. Thus, Akutsu is indeed silent regarding a compressor that is connected to a discharge port of the last-stage vacuum pump of said at least one-stage vacuum pump without divergence, as recited in claim 1.

On the other hand, Puech discloses an additional pump additional pump 6 connected to the primary pump 4 (*see* Puech, Figure 1). However, the additional pump 6 of Puech is connected, in parallel with a preliminary evacuation pipe 7, to the last-stage vacuum pump (i.e., Primary pump 4 in Figure 1 of Puech). Thus, the additional pump 6 of Puech is actually connected to the last-stage vacuum pump 1 with divergence, rather than without divergence, as recited in the independent claims.

Furthermore, because the additional pump 6 of Puech is a dry pump that has only low pumping capacity and passes only a small proportion of gas flow, “the preliminary evacuation pipe 7 is needed for the gas flow at a higher flow rate that the primary pump 1 must evacuate at the start of evacuating a vacuum enclosure 3” (see Puech, column 4, lines 25-29 and column 4, lines 66 to column 5, line 1), teaching away from the compressor connected to a discharge port of the last-stage vacuum pump of said at least one-stage vacuum pump without divergence, as recited in claim 1.

Thus, Akutsu and Puech, either alone or in combination, fail to teach or disclose a compressor connected without divergence to the last-stage vacuum pump and aspirates all of gases from the last-stage vacuum pump, as recited in claim 1.

Independent claims 5, 7 and 10, and the dependent claims of the application, involve similar features and are distinguished on the same basis.

III. Conclusion

Applicant believes that the present application is now in condition for allowance. Favorable reconsideration of the application as amended is respectfully requested.

The Examiner is invited to contact the undersigned by telephone if it is felt that a telephone interview would advance the prosecution of the present application.

The Commissioner is hereby authorized to charge any additional fees which may be required regarding this application under 37 C.F.R. §§ 1.16-1.17, or credit any overpayment, to Deposit Account No. 19-0741. Should no proper payment be enclosed herewith, as by a check being in the wrong amount, unsigned, post-dated, otherwise improper or informal or even entirely missing or a credit card payment form being unsigned, providing incorrect information resulting in a rejected credit card transaction, or even entirely missing, the Commissioner is authorized to charge the unpaid amount to Deposit Account No. 19-0741. If

any extensions of time are needed for timely acceptance of papers submitted herewith,
Applicant hereby petitions for such extension under 37 C.F.R. §1.136 and authorizes payment
of any such extensions fees to Deposit Account No. 19-0741.

Respectfully submitted,

Date Jan 15, 2010

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